CLAIMS

1. A method, comprising:

a) providing meltable material and a device, said device comprising: an inlet port in fluidic communication with a first microchannel, said first microchannel having a middle section and an end section, said end section intersecting a second microchannel at a junction, wherein a first heater element is associated with said inlet port, a second heater element is associated with said middle section of first microchannel, and a third heater element is associated with said second microchannel at said junction, and wherein said inlet port is linked to a gas source;

b) introducing said meltable material at said inlet port;

c) activating said first heater element under conditions such that said meltable material at least partially melts to created melted material;

d) applying pressure with said gas source to said melted material; and

e) activating said second heater under conditions such that said melted material remains melted, moves to said junction and at least partially solidifies, thereby creating a plug at said junction blocking said second microchannel.

2. The method of Claim 1, wherein steps (b) and (c) are performed in any order.

3. The method of Claim 1, wherein steps (b) and (c) are performed simultaneously.

4. The method of Claim 1, wherein steps (d) and (e) are performed in any order.

5. The method of Claim 1, wherein steps (d) and (e) are performed simultaneously.

6. The method of Claim 1, wherein steps (c), (d) and (e) are performed simultaneously.

7. The method of Claim 1, wherein said gas source is an air source.

8. The method of Claim 1, wherein said junction is configured as a "T" junction.

9. The method of Claim 1, wherein said junction is configured as a "Y" junction.

10. The method of Claim 1, wherein said said meltable material is selected from a group consisting of solder, plastic, polymer, electrorheological fluid and wax.

11. The method of Claim 1, wherein after said melted material moves to said junction in step (e), said melted material is allowed to cool.

12. The method of Claim 1, wherein said inlet port is further linked to a vacuum.

13. The method of Claim 12, further comprising:

(f) activating said third heater under conditions such that plug at said junction at least partially melts so as to create an at least partially melted plug; and

(g) applying a vacuum through said inlet port under conditions such that said at least partially melted plug is retracted from said junction, thereby unblocking said second microchannel.

14. The method of Claim 13, further comprising activating said second heater at approximately the same step (f) is performed.

15. A method, comprising:

a) providing meltable material and a device, said device comprising:
an inlet port in fluidic communication with a first microchannel, said first microchannel disposed in a substrate and having a middle section and an end section, said end section intersecting a second microchannel at a junction, said second microchannel disposed in a substrate, wherein a first heater element is associated with said inlet port, a second heater element is

associated with said middle section of first microchannel, and a third heater element is associated with said second microchannel at said junction, and wherein said inlet port is linked to a gas source;

b) introducing said meltable material at said inlet port;

c) activating said first heater element under conditions such that said meltable material at least partially melts to created melted material;

d) applying pressure with said gas source to said melted material; and

e) activating said second heater under conditions such that said melted material remains melted, moves to said junction and at least partially solidifies, thereby creating a plug at said junction blocking said second microchannel.

16. The method of Claim 15, wherein steps (b) and (c) are performed in any order.

17. The method of Claim 15, wherein steps (b) and (c) are performed simultaneously.

18. The method of Claim 15, wherein steps (d) and (e) are performed in any order.

19. The method of Claim 15, wherein steps (d) and (e) are performed simultaneously.

20. The method of Claim 15, wherein steps (c), (d) and (e) are performed simultaneously.

21. The method of Claim 15, wherein said gas source is an air source.

22 The method of Claim 15, wherein said junction is configured as a "T" junction.

23. The method of Claim 15, wherein said junction is configured as a "Y" junction.

24. The method of Claim 15, wherein said said meltable material is selected from a group consisting of solder, plastic, polymer, electrorheological fluid and wax.

25. The method of Claim 15, wherein after said melted material moves to said junction in step (e), said melted material is allowed to cool.

26. The method of Claim 15, wherein said inlet port is further linked to a vacuum.

27. The method of Claim 26, further comprising:

(f) activating said third heater under conditions such that plug at said junction at least partially melts so as to create an at least partially melted plug; and

(g) applying a vacuum through said inlet port under conditions such that said at least partially melted plug is retracted from said junction, thereby unblocking said second microchannel.

28. The method of Claim 27, further comprising activating said second heater at approximately the same step (f) is performed.

29. The method of Claim 15, wherein said substrate is selected from the group consisting of glass and silicon.

30. A device, comprising: an inlet port in fluidic communication with a first microchannel, said first microchannel having a middle section and an end section, said end section intersecting a second microchannel at a junction, wherein a first heater element is associated with said inlet port, a second heater element is associated with said middle section of first microchannel, and a third heater element is associated with said second microchannel at said junction, and wherein said inlet port is linked to an air source and a vacuum source